

## The Neurobehavioral Impacts of Synthetic Food Dyes: Experiences of a Licensed Clinical Social Worker and Mother

I am a Licensed Clinical Social Worker who has been providing mental health assessment and treatment for children and adolescents for 21 years. In 2009, when our second daughter was two and a half years old she began to have increasing sporadic, unpredictable, aggressive tantrums. "It's the terrible twos" my mother kept saying, which I didn't feel was quite explaining it. As her mother, and influenced by my professional education and experience, I innately attempted to observe, track and predict behavior that was increasingly less trackable and less predictable through the following year, along with what seemed to be a somewhat consistent level of mild to moderate irritability and poor sleep quality. The worst tantrums would often be during or immediately following 'fun' family activities: weddings, parties, the circus, a trip to the mall or grocery store, visits with family. The behavior did not make sense within the environmental and emotional contexts. I was perplexed. I would joke, often laughing through tears, that we took our older daughter at age 3 to Italy without a single tantrum but we couldn't take our second to the grocery store without one. The way home from daycare daily at 5:30pm, before dinner, would also be full of tantruming. I was beginning to think she was possibly exhibiting a developing behavioral disorder such as Attention Deficit Hyperactivity Disorder as during these tantrums she would clearly be out of her own control, look straight through us until an unexplainable rage 'burned off'. She would afterward present weepy, sorrowful, unsure of why she herself was feeling the way she had. Her verbal skills were developmentally average but the tantruming seemed to decrease her verbal abilities dramatically. I had her speech tested, the CPSE speech therapist stated she was just a 'late talker' but would be fine. As her verbal skills increased through her third year, she would apologize after the tantrums and weep saying she did not know why she was so mad. I could see she was confused and upset by this, in itself, which further exacerbated her agitation and decreased her trust of herself and us as parents who were often in the position of correcting, reprimanding, attempting to redirect and often just 'holding her still' while she growled, yelled or kicked and flailed. I attempted all behavioral tools I had at my professional disposal. Often the tantrums would come on suddenly and last up to 30 minutes. The only common factor I could see at that time was that she was most upset when we tried to change the course of things, leaving the sitters, getting her coat and shoes on, leaving a store. Many times if she could just run about she was ok until we attempted to reign her in or go to leave somewhere. Most confusingly, this behavior was sporadic, some days were tantrum free, others unbelievably intense and draining.

The most pivotal day of our lives was actually the most difficult day of parenting I have ever experienced. We were leaving for a family camping trip. Our niece stayed over the night before we left to go with us the following day. Our daughter tantrumed that night after dinner, was extraordinarily difficult to get to sleep, awoke from her sleep three times with crying nightmares-all unusual. The next morning she continued to tantrum at every redirection. The ride to the campground was difficult. We attempted to take her out of the truck to go into McDonald's for lunch and she refused to get out of the truck, refused to put her shoes on, crying. This was the most prolonged and most difficult behavior we had ever seen from her. Once in the bathroom at McDonald's she refused to go into the stall, stood barefoot to my

dismay on the public restroom floor, screaming. People thought I was abusing her, when we came out of the bathroom the full line of people glared at me and looked at her with pity. It was very hot. She would not eat. I coaxed her into drinking a vanilla shake. The tantrum continued. We got to the lakeside campsite. She was sweating, hot, tired, miserable. As we got out of the truck I offered for her to go into the lake to swim, she agreed. She cooled off, then refused to get out of the lake. At this, my niece said she would give her more gum if she got out of the lake. I did not realize she had been giving her gum. I knew she swallowed gum almost immediately so I did not give it to her. My niece said she had been giving her gum since she arrived the night before. She had given her over a full pack of gum which was now ingested. I asked to see the pack. It was Trident Tropical Twist, having yellow dye #5, yellow dye #6, red #40 and aspartame in it. We did not allow her to have anything with those ingredients for the rest of the week vacation. The week proceeded without another tantrum. The immediate change was dramatic. It felt like a miracle.

I thought back to every severe tantrum I could remember and realized each one was connected to food: cotton candy and a red snow cone at the circus, cake with frosting at a birthday party, orange soda, dum dums when we left grandma's, ice cream with rainbow sprinkles or red dip, a shirley temple as a reward for being an excellent flower girl at a wedding. Each tantrum began within 10-20 minutes of ingestion and lasted up to 30 minutes. It seemed when the dye was ingested with or in a protein the level of aggression was lower and the duration of tantrum was less, when the dye was in a pure carbohydrate vehicle it had a more direct and longer lasting effect. When we got home I began researching the ingredients and I removed everything that had red dye #40, yellow #5, yellow #6 and aspartame from our pantry, fridge and freezers. I discovered that it was a major task. Every food label had to be read to remove food not obviously red, orange, yellow, green, blueish-green, pink and purple. It was a lot of food, more than half of my pantry. I was shocked- red dye in chocolate frosting, sprinkles, cake, pudding- yellow dye in white frosting, pre packaged food, pickles. Almost all pre-packaged carbohydrates in my home had these dyes: cereal, juices, baked goods, sauces, condiments, pretty much any candy, jello, processed cheese, ice cream, most processed food. Over the next year I continued to find hidden dyes in unexpected foods and pharmaceuticals. I caught myself before giving her her daily evening dose of fluoride with red dye #40 in it and her daily Flintstones vitamin with red and yellow dye in it- 'healthy', doctor recommended things. I then realized she had not slept well since I began giving them to her at age two. I felt guilt for not knowing. I was able to discern that red dye #33 in Tylenol did not cause the tantrums for her, nor blue dye. I began asking in restaurants about ingredients. I did not give her anything that I could not read the ingredient label beforehand. That vanilla shake I gave her to help cool her off at McDonald's- had yellow dye #5 and #6. I could be found asking questions about ingredients wherever my daughter could eat: potlucks, bake sales, school lunch, every classroom teacher (no birthday cupcakes or M&M's for fun math labs), camp organizers, coaches, waitstaff/cooks at every meal out, ice cream shops, church events, family gatherings. If there was no clarity with ingredients, which is often, we would not serve the food to our daughter. Thankfully, because by her nature she is truly easygoing, and even at age four she understood and was able to verbalize how the dyes made her feel, she took all the no's well.

Not long after returning from the trip, I brought her to her pediatrician who referred her to an allergist/immunologist that he recommended who stated he had no knowledge of a test for this, as he felt it was not an allergic reaction, though with his own research he concluded that she could not metabolize these synthetic chemicals and they were acting as a neurotoxin for her. The doctor wrote a letter for her preschool she was starting that next month so that red dye #40, yellow dye #5 and yellow dye #6 would not be allowed to be given to her during the school day. It turned out these three synthetic dyes were called 'sister dyes' or 'coal tar dyes' with similar chemical compounds originating from petroleum, they were not food, but in the food supply. Even 'natural food' stores sell products with synthetic dyes. I was feeding my children petroleum based products? I never considered petroleum a food and I do not believe anyone does.

The tantrums never returned. The daily tantrums on the way home from daycare stopped immediately after her babysitter stopped giving her the '4:15pm snack' which was usually a brightly colored popsicle or orange ice cream push up pop. As I drove her home my first day back to work, she sang in the backseat. She didn't resent me working and leaving her or hate coming home, as I very humanly feared for over a year, and she did not have a behavioral, mood or attachment disorder. She began to connect to me and her father and older sister more. She slept better, she cuddled more, she smiled and laughed more. She talked and sang more. She became our funny, social girl. Without synthetic food dyes she was free then to grow to be herself.

I then became angry and questions arose for me personally and professionally. My undergraduate degree was in Human Development. I knew how critical a child's development is between ages 2 and 5, the years after infancy and before school. How many children have been derailed neurobehaviorally before anyone could even realize they weren't like that to begin with due to beginning to eat these dyes as soon as parents began feeding them 'adult food'? A truly voiceless group of children. Why was no one talking about this? Why did these facts seem hard for people to hear? What would our daughter's connection to others have been like if I did not discover this? How could she have gotten through school? How would the last 18 months of ingesting a neurotoxin for her effect her neurologically and developmentally for the rest of her life? What if I never discovered this? I knew enough to know she would have eventually been identified as in need of services or diagnosed with a psychological condition. How many children have I worked with and 'treated' that may have been reacting to food dyes since they began ingesting them? How has this changed their personalities and ability to bond with their caregivers? I discovered many ADHD and psychotropic medications had red or other synthetic dyes in them. Not only could children be being misdiagnosed, but the medication prescribed to treat them was making their symptoms worse. I continued researching. Many pharmaceuticals have these dyes, including general anesthesia for dental work and surgery. How would pharmaceutical companies feel about removing dyes or decreasing profits from psychotropic medication that is overprescribed?

I learned that in the same month as our camping trip, July 2010, the European Union had just began using warning labels for food and pharmaceuticals with these dyes, letting the public know that children may have an adverse behavioral response to them. As a mother, I was sickened by the fact that the United States FDA already knew about this but chose to do nothing

to protect American children and their parents who were suffering along side of them. I was a patient, healthy parent whose emotional well being was under siege with this uncontrollable behavior. What about the parents with less patience, less support, less ability to handle these behaviors? Professionally, I knew rates of psychiatric diagnosis, special education classifications, psychotropic medication prescriptions, marital and parent-child discord and child abuse are all being increased by what I knew to be truer than anything I have ever witnessed...these dyes turned my child behaviorally and emotionally into something other than herself, vulnerable to a system ready to 'treat her symptoms' but most vulnerable to a Government that is choosing to look the other way and not warn, prevent or protect their children from the poisoning of their body, mind and spirit.

Arguments against warning labels and dye removal from the food supply tend to say that not enough children are affected by dyes to warrant these interventions. They also argue that parents who are concerned should just remove the dyes from the child's diet. Dye removal from the diet is a task one needs to have the capacity for and also must have pre-existing knowledge that the dyes should be removed to decrease behavioral symptoms. Those parents must also have the financial, cognitive and socio-economic means to obtain dye-free food. The most vulnerable child is the exact child who will not have a parent with this knowledge or even the belief it is true, even if educated. What will occur for those children will be a Medicaid reimbursed physician diagnosing and then prescribing stimulants for an ADHD diagnosis, mood stabilizers for behavioral or mood disorders or antipsychotics for an attachment disorder. Those children will then be labeled as children with 'pre-existing psychiatric disorders who are 'sensitive' to dyes. Autism spectrum symptoms often manifest and are diagnosed between ages 2 and 4, the exact time these neurotoxins are introduced to their diet. It took me, with all of my prior professional knowledge, over 18 months of daily observation and a unique opportunity to see my child overdosed on these dyes outside of her normal routine to even see a direct connection between certain chemicals and her behavior. It wasn't so clear beforehand because she had a consistent low level of these dyes in her system daily, causing consistent irritability. Many Americans believe if the Government is OK with synthetic dyes and have not warned against them, then they must be safe. I was one of them.

Who is benefitting from keeping synthetic food dyes in the American food supply? Whomever it is, they are benefitting at the cost of the neurological health and psychological welfare of the children and families of our country.

*I am thankful to information published in 2009, "Food Dyes: A Rainbow of Risks", that corroborated and supported removing food dyes from my families' life at that time. I was able to find scientific research supporting the validity of my daughter's adverse behavioral reactions, as many friends, family members and colleagues at the time had not truly believed these reactions could be so profound. I felt very alone at the time, thankful to have found a supportive physician but still amazed at the blind eye the FDA was and is turning. In an interview regarding effects of synthetic food dyes, I was asked if I thought these dyes are safe. I stated that 'it is safe for the FDA to say these dyes are safe, but they are not safe for my child, so I do not know how they are safe for any child.' The FDA is using studies to support their position that these dyes are*

*'safe' with dye levels studied being much lower than the levels children would eat in an average American processed-carbohydrate-driven day, not even considering a special event like a school party or holiday gathering. I will continue to advocate for warning labels and believe it is my ethical obligation to inform others about the adverse neurobehavioral impact of synthetic dyes on children. Professionally, I screen for food dye reactions in my practice and encourage my colleagues to do the same. Our daughter is presently a healthy 12 year old who advocates on her own behalf regarding the impact of synthetic dyes on her well-being.*

*Below are excerpts from literature currently available from the FDA. I can not help but note that this information is presented with biases that conform to an agenda to support and keep synthetic dyes in the food and drug supply, to assure the public that they are safe, and to fool the American public into believing that natural foods are unnatural colors for the purpose of corporate profits, not public health. For instance, even orange rinds, 'fresh fruit', can be often synthetically dyed.*

<https://www.fda.gov/Food/IngredientsPackagingLabeling/FoodAdditivesIngredients/ucm094211.htm>

**"Overview of Food Ingredients, Additives & Colors**

**International Food Information Council (IFIC) and U.S. Food and Drug Administration (FDA)**

**November 2004; revised April 2010**

(Also available in [printable brochure format, PDF \(330 kb\)](#))

### **What Is a Color Additive?**

A color additive is any dye, pigment or substance which when added or applied to a food, drug or cosmetic, or to the human body, is capable (alone or through reactions with other substances) of imparting color. **FDA is responsible for regulating all color additives to ensure that foods containing color additives are safe to eat, contain only approved ingredients and are accurately labeled.**

Color additives are used in foods for many reasons: 1) to offset color loss due to exposure to light, air, temperature extremes, moisture and storage conditions; 2) to correct natural variations in color; 3) to enhance colors that occur naturally; and 4) to provide color to colorless and "fun" foods. Without color additives, colas wouldn't be brown, margarine wouldn't be yellow and mint ice cream wouldn't be green. **Color additives are now recognized as an important part of practically all processed foods we eat.**

FDA's permitted colors are classified as subject to certification or **exempt from certification**, both of which are subject to rigorous safety standards prior to their approval and listing for use in foods.

- **Certified colors** are synthetically produced (or **human made**) and used widely because they impart an intense, uniform color, **are less expensive**, and blend more easily to create a variety of hues. There are nine certified color additives approved for use in the United States (e.g., FD&C Yellow No. 6. See chart for [complete list](#)). Certified food colors generally **do not add undesirable flavors** to foods.

- Colors that are **exempt from certification** include pigments derived from natural sources such as vegetables, minerals or animals. **Nature derived color additives are typically more expensive than certified colors and may add unintended flavors to foods.** Examples of exempt colors include annatto extract (yellow), dehydrated beets (bluish-red to brown), caramel (yellow to tan), beta-carotene (yellow to orange) and grape skin extract (red, green).”

<b>“Color Additives</b>	Offset color loss due to exposure to light, air, temperature extremes, moisture and storage conditions; correct natural variations in color; enhance colors that occur naturally; provide color to colorless and "fun" foods	Many processed foods, (candies, snack foods margarine, cheese, soft drinks, jams/jellies, gelatins, pudding and pie fillings)	FD&C Blue Nos. 1 and 2, FD&C Green No. 3, FD&C Red Nos. 3 and 40, FD&C Yellow Nos. 5 and 6, Orange B, Citrus Red No. 2, annatto extract, beta-carotene, grape skin extract, cochineal extract or carmine, paprika oleoresin, caramel color, fruit and vegetable juices, saffron (Note: Exempt color additives are not required to be declared by name on labels but may be declared simply as colorings or color added)”
-------------------------	--	---	--



